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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,162	02/13/2004	Matthias Slodowski	016790-0489	5100

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EXAMINER

STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/777,162	Applicant(s) SLODOWSKI, MATTHIAS	
	Examiner Gordon J. Stock	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-13 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-13 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendment received on September 19, 2006 has been entered into the record.

Drawings

2. The Drawings filed on September 19, 2006 are accepted by the Examiner.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 10-13, 16-18** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 10-13, 16-18 are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. Merely 'performing a detailed measurement (line 10 of **claim 10**)' would not appear to be sufficient to constitute a tangible result, since the outcome of the performing the detailed measurement step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible. **Claims 11-13, 16-18** are rejected for depending upon a rejected base claim; wherein **claims 11-13, 16-18** further limiting of the parent claim still does not have a tangible result.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-2, 6, 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Birkner et al. (2002/0051698)**—previously cited in view of **Nikoonahad et al. (6,919,957)**.

As for **claim 1**, Birkner in a substrate conveying module discloses the following: at least one cassette element (Fig. 7: 2a-2d) with a transport mechanism provided between the cassette element for the wafers and the two workstations (Fig. 7: 1a, 1b); wherein, the two workstations (Fig. 7: 3) may be a thin-layer micrometrology system and a thin-layer macrometrology system (paragraph 0005). Birkner is silent concerning the first measurement unit for thin-layer micrometrology comprises a microphotometer and a microellipsometer. However, Nikoonahad in a system for determining presence of defects teaches that a micrometrology unit may comprise a microphotometer and a microellipsometer (col. 53, lines 10-20; col. 86, lines 1-20 with lines 55-65; col. 78, lines 44-60). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the micrometrology unit comprise a microphotometer such as a spectroscopic reflectometer and a microellipsometer such as spectroscopic ellipsometer in order to determine several types of defects on a wafer to gather a more accurate profile of the wafer that is being inspected.

As for **claim 2**, Birkner in view of Nikoonahad discloses everything as above (see **claim 1**). In addition, Birkner discloses one workstation being enclosed by a housing defining a basal area (Fig. 9: basal area of region 3).

As for **claim 6**, Birkner in view of Nikoonahad discloses everything as above (see **claim 1**). In addition, Birkner discloses a macrophotometer, an electronic camera (paragraph 0005).

As for **claim 9**, Birkner in view of Nikoonahad discloses everything as above (see **claim 1**). In addition, Birkner discloses wafers (paragraphs 0002-0003).

5. **Claims 3 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Birkner et al. (2002/0051698)**—previously cited in view of **Nikoonahad et al. (6,919,957)** further in view of **Birkner et al. (2002/0095999)**—previously cited.

As for **claim 3**, Birkner in view of Nikoonahad discloses everything as above (see **claim 1**). In addition, Birkner '698 discloses the workstations in housing with a basal area (Fig. 9). However, Birkner '698 does not state that the housing is arranged such that the basal area is no longer than a basal area of the apparatus for thin-layer apparatus that contains only a measurement unit for thin-layer micrometrology. However, Birkner '999 teaches having a basal area for three workstations and only one is a microscopic inspection station (Fig. 1: 18).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the basal area be no larger than a basal area for an apparatus for thin-layer metrology that contains only a measurement unit for thin-layer micrometrology to have a more compact system.

As for **claim 7**, Birkner in view of Nikoonahad discloses everything as above (see **claim 1**). Birkner '698 is silent concerning a feeder. However, Birkner '999 discloses a feeder for

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transport between a cassette and workstation (Fig. 1: 1). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a feeder in order to feed the substrate from the cassette to the workstation for inspection.

7. **Claim 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Birkner et al. (2002/0051698)**—previously cited in view of **Nikoonahad et al. (6,919,957)** of **Birkner et al. (2002/0095999)**—previously cited further in view of **Kato et al. (6,241,456)**—previously cited.

As for **claim 8**, Birkner '698 in view of Nikoonahad and Birkner '999 discloses everything as above (see **claim 7**). In addition, in view of Birkner '999 the substrates are pullable with the feeder out of the cassette element for delivery into the measurement unit (Fig. 1: 1). And Birkner '698 discloses automated inspection (paragraph 0005). Birkner '698 and Birkner '999 are both silent concerning the substrates being guidable along beneath the measurement unit for macrometrology. However, Kato in a wafer inspecting apparatus teaches the wafers transported under the inspection stations (Fig. 1: 2 and 8). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the substrate guidable beneath the macroinspection in order to properly inspect the wafer surface for defects.

8. **Claims 10-13, 16, 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Birkner et al. (2002/0051698)**—previously cited in view of applicant's disclosure of prior art further in view of **Nikoonahad et al. (6,919,957)**.

As for **claim 10**, Birkner discloses transferring semiconductor substrates (paragraphs 0002-0003) out of at least one cassette (Fig. 7: 1a, 1c, 2a-2d) to a measurement unit of thin-layer micrometrology (Fig. 7: 3) being guided along past a measurement unit for thin-layer

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macrometrology (paragraph 0005; Fig. 7: two workstations, 3); determining locations for inspection automatically (paragraph 0005, lines 20-22) with a computer (Fig. 7: 6); wherein, two workstations may be micro and macroinspect (paragraph 0005). Birkner is silent concerning having the macroinspection workstation determining locations for micrometrology instrument to inspect and having the micrometrology performing measurements there. However, applicant's disclosure of prior art teaches that the macroinspection station determines where the microinspection should inspect the wafer (page 2, lines 20-25). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the macroinspection system determine positions of defects in order for the microinspection system to thoroughly inspect the defective areas.

Birkner is silent concerning the measurement unit for thin-layer micrometrology comprising a microphotometer and a microellipsometer. However, Nikoonahad in a system for determining presence of defects teaches that a micrometrology unit may comprise a microphotometer and a microellipsometer (col. 53, lines 10-20; col. 86, lines 1-20 with lines 55-65; col. 78, lines 44-60). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the micrometrology unit comprise a microphotometer such as a spectroscopic reflectometer and a microellipsometer such as spectroscopic ellipsometer in order to determine several types of defects on a wafer to gather a more accurate profile of the wafer that is being inspected.

As for **claim 11**, Birkner in view of applicant's disclosure of prior art and Nikoonahad discloses everything as above (see **claim 10**). In addition, Birkner discloses automated locations for measurements transferal (paragraph 0005, lines 20-22). In view of applicant's disclosure of

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prior art the macrometrology system inspects the surface and defects found are preselected locations for the micrometrology systems (page 2, lines 20-25).

As for **claim 12**, Birkner in view of applicant's disclosure of prior art and Nikoonahad discloses everything as above (see **claim 10**). In addition, Birkner discloses multiple substrates may be inspected simultaneously (Fig. 7: two workstations, 3 and four cassettes of substrates, 2a-2d).

As for **claim 13**, Birkner in view of applicant's disclosure of prior art and Nikoonahad discloses everything as above (see **claim 10**). In addition, in view of applicant's disclosure of prior art the macrometrology system determines locations for measurement by the micrometrology system with measured values, thresholds defined as types of defects, as a decision as to whether microscopic points are to be measured by the micrometrology system (page 2, lines 20-25).

As for **claim 16**, Birkner in view of applicant's disclosure of prior art and Nikoonahad discloses everything as above (see **claim 10**). In addition, Birkner discloses a macrophotometer, an electronic camera (paragraph 0005).

As for **claim 18**, Birkner in view of applicant's disclosure of prior art and Nikoonahad discloses everything as above (see **claim 10**). Birkner and applicant's disclosure of prior do not specifically state using a coordinate transformation. However, applicant's disclosure of prior art teaches that defects by macroinspection are used for microinspection (page 2, lines 24-25) and Birkner discloses automation of locations for inspection (paragraph 0005, lines 20-22). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was

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made to have coordinate transformation of the defects found in macroinspection in order to determine the locations in the micrometrology system's coordinate system for inspection.

9. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Birkner et al. (2002/0051698)**—**previously cited** in view of applicant's disclosure of prior art further in view of **Nikoonahad et al. (6,919,957)** and further in view of **Birkner et al. (2002/0095999)**—**previously cited**.

As for **claim 17**, Birkner in view of applicant's disclosure of prior art and Nikoonahad discloses everything as above (see **claim 10**). In addition, Birkner discloses a transport mechanism (Fig. 7: 1a and 1c). Birkner '698 is silent concerning a feeder. However, Birkner '999 discloses a feeder for transport between a cassette and workstation (Fig. 1: 1). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a feeder in order to feed the substrate from the cassette to the workstation for inspection.

Response to Arguments

10. Applicant's remarks with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. As for the allowable subject matter set forth in the previous action, the Examiner apologizes for the inconvenience but upon further search and further consideration rejections under 35 U.S.C. 101 and 35 U.S.C. 103(a) have been made.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

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2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

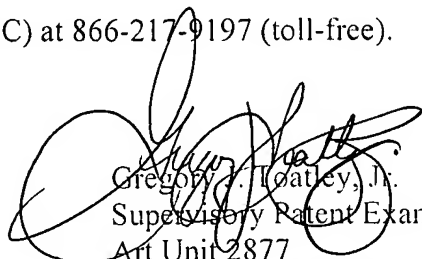
The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


gs

December 6, 2006


Gregory J. Toatley, Jr.
Supervisory Patent Examiner
Art Unit 2877
Dec 06